

IN THE CLAIMS

Please amend the claims as follows:

1. (Previously presented) A method for coding or decoding an image, comprising:
 - providing an encoded macroblock bit stream that includes global motion parameters associated with a current image frame;
 - deriving local motion vectors from the global motion parameters in the encoded macroblock bit stream for individual macroblocks in the current image frame;
 - using bilinear interpolation to derive the local motion vectors from the global motion parameters in the encoded macroblock bit stream;
 - using the local motion vectors to identify reference blocks in a reference frame without generating or modifying the reference frame; and
 - using the identified reference blocks to encode or decode the macroblocks in the current image frame.

2. (Previously presented) A method according to claim 1 including:
 - identifying four global motion vectors associated with corners of the current image frame; and
 - generating the local motion vectors by using bilinear interpolation to interpolate the four global motion vectors to locations of the macroblocks in the current image frame.

3. (Previously presented) A method for coding or decoding an image, comprising:
 - providing global motion parameters associated with a current image frame;
 - deriving local motion vectors from the global motion parameters for individual macroblocks in the current image frame;
 - using the local motion vectors to identify reference blocks in a reference frame;
 - using the identified reference blocks to encode or decode the macroblocks in the current image frame; and
 - deriving the local motion vectors from the global motion parameters as follows:

$$y(x, y) = r^0 + \left(\frac{x}{H-a} \right) r^x + \left(\frac{y}{V-a} \right) r^y + \left(\frac{x}{H-a} \right) \left(\frac{y}{V-a} \right) r^{xy} \quad (1)$$

where v^{00} , v^{H0} , v^{0V} , and v^{HV} represent the global motion parameters at four corners of the current image frame, (0,0), ($H-4$, 0), (0, $V-4$), and ($H-4$, $V-4$), respectively; x and y represent an upper-left pixel location for the macroblock; and r^0 , r^x , r^y , and r^{xy} are the following:

$$\underline{r}^0 = \underline{v}^{00}$$

$$\underline{r}^x = \underline{v}^{H0} - \underline{v}^{00}$$

$$\underline{r}^y = \underline{v}^{0V} - \underline{v}^{00}$$

$$\underline{r}^{xy} = \underline{v}^{00} - \underline{v}^{H0} - \underline{v}^{0V} + \underline{v}^{HV}$$

4. (Previously presented) A method according to claim 1 including deriving local motion vectors from the global motion parameters for individual macroblocks in the current image frame independently of types of local motion vectors or global motion vectors derived for other macroblocks in the current image frame.

5. (Original) A method according to claim 1 including:

using the derived local motion vectors to identify reference blocks in the reference frame that are substantially the same as the macroblocks in the current image frame; and
encoding the macroblocks as copy type macroblocks that are decoded by copying the identified reference blocks into the macroblocks.

6. (Original) A method according to claim 5 including:

identifying residuals between the reference blocks and the macroblocks; and
encoding only the residuals for the macroblocks.

7. (Currently amended) A method for coding or decoding an image, comprising:
receiving an encoded bit stream including macroblocks identified as global motion vector coded and either copy type or residual type;

receiving no local vectors in the encoded bit stream for the macroblocks identified as global motion vector coded;

using bilinear interpolation to derive local motion vectors for individual macroblocks only from global motion parameters in the encoded bit stream and independently of types of local motion vectors or global motion vectors used for other macroblocks in the a current image frame;

using the derived local motion vectors to identify reference blocks in a reference frame;

copying the identified reference blocks for the copy type macroblocks; and adding encoded residuals to the identified reference blocks for the residual type macroblocks[[.]];

using the identified reference blocks to encode or decode the macroblocks in the current image frame.

8. (Previously presented) A method according to claim 1 including:
deriving the local motion vectors as follows:

$$\underline{v}(x, y) = \underline{r}^0 + \left(\frac{x}{H-a} \right) \underline{r}^x + \left(\frac{y}{V-a} \right) \underline{r}^y + \left(\frac{x}{H-a} \right) \left(\frac{y}{V-a} \right) \underline{r}^{xy}$$

where v^{00} , v^{H0} , v^{0V} , and v^{HV} represent the global motion vectors at four corners of the current image frame, (0,0), ($H-a$, 0), (0, $V-a$), and ($H-a$, $V-a$), respectively; a represents the pixel subblock size; x and y represent an upper-left pixel location for the macroblock; and r^0 , r^x , r^y , and r^{xy} are the following:

$$\underline{r}^0 = \underline{v}^{00}$$

$$\underline{r}^x = \underline{v}^{H0} - \underline{v}^{00}$$

$$\underline{r}^y = \underline{v}^{0V} - \underline{v}^{00}$$

$$\underline{r}^{xy} = \underline{v}^{00} - \underline{v}^{H0} - \underline{v}^{0V} + \underline{v}^{HV}.$$

9. (Original) A method according to claim 1 including:
generating subblock local motion vectors for individual subblocks in same macroblocks using the global motion parameters;
identifying individual reference subblocks in the reference frame pointed to by the subblock local motion vectors; and
separately encoding and decoding the subblocks using the identified reference subblocks.

10. (Currently amended) A decoder, comprising:
~~a processor~~ an input receiving encoded image frames wherein a common set of global motion estimation parameters are included in the encoded image frames for identified

macroblocks and no local motion vectors are included in the encoded image frames for the identified macroblocks[[,]]:

~~the processor decoding logic circuitry deriving local motion vectors for the identified individual macroblocks from the global motion estimation parameters independently of types of local motion vectors or global motion vectors used for other adjacent macroblocks in the encoded image frames, the decoding logic circuitry using the derived local motion vectors to identify reference blocks in a current reference frame[[,]], and then using the reference blocks to reconstruct the identified macroblocks in a current frame.~~

~~adding logic circuitry combining the reference blocks to reconstruct the identified macroblocks in a current frame;~~

~~wherein decoding logic circuitry generates the local motion vectors by bilinearly interpolating the global motion estimation parameters to locations of the macroblocks in the current frame.~~

11. (Cancelled) A decoder according to claim 10 wherein the processor generates the local motion vectors by bilinearly interpolating the global motion estimation parameters to locations of the macroblocks in the current frame.

12. (Currently amended) A decoder according to claim 10 wherein ~~the processor~~ ~~the decoding logic circuitry~~ detects code words included along with the encoded image frames that identify global motion vector coded macroblocks that do not have associated local motion vectors in the encode image frames.

13. (Original) A decoder according to claim 12 wherein the code words indicate when the macroblocks are a direct copy of the reference blocks.

14. (Original) A decoder according to claim 12 wherin the code words indicate when residuals are added to the reference blocks to reconstruct the macroblocks.

15. (Currently amended) A decoder according to claim 10 wherein ~~the processor~~ ~~the decoding logic circuitry~~ uses the global motion estimation parameters to generate local motion vectors for different subblocks, ~~the processor~~ ~~the decoding logic circuitry~~ using the local motion vectors to identify diffrent reference subblocks in the current reference frame

and then using the identified reference subblocks to reconstruct the subblocks in the current frame.

16. (Currently amended) An encoder, comprising:

~~a processor encoding logic circuitry encoding an image frame by encoding a set of global motion estimation parameters for an image frame[[:]], the encoding logic circuitry identifying macroblocks in the image frame in which local motion vectors associated with the identified macroblocks should be derived are derivable from the global motion estimation parameters in the an encoded macroblock bit stream using bilinear interpolation[[:]], and not encoding local motion vectors associated with the identified macroblocks[[:]]; adding logic circuitry to combine the identified macroblocks into the encoded macroblock bit stream.~~

17. (Currently amended) An encoder according to claim 16 wherein the local motion estimation parameters vectors are used to identify locations in a reference frame that are used to generate images for the identified macroblocks without the global motion estimation parameters generating or modifying the reference frame.

18. (Currently amended) An encoder according to claim 16 wherein the processor encoding logic circuitry compares the global motion estimation parameters with block motion estimation parameters to determine which macroblocks use the local motion estimation parameters vectors derived from the global motion estimation parameters.

19. (Currently amended) An encoder according to claim 16 wherein the processor encoding logic circuitry generates codewords that identify the macroblocks that derive the local motion estimation parameters vectors only from the global motion estimation parameters.

20. (Currently amended) An encoder according to claim 16 wherein the processor encoding logic circuitry identifies macroblocks that are directly copied from reference blocks pointed to by the local motion estimation parameters vectors derived from the global motion estimation parameters.

21. (Currently amended) An encoder according to claim 16 wherein the processor encoding logic circuitry encodes residuals for the identified macroblocks but no local motion estimation parameters vectors.

22. (Currently amended) An encoder according to claim 16 wherein the processor encoding logic circuitry performs run length coding on the encoded image frame.

23. (Previously presented) An encoder according to claim 16 wherein the macroblocks are $N \times N$ pixel arrays, where N is an integer; subblocks are $M \times M$ pixel arrays, where M is an integer less than or equal to N .

24. (Currently amended) The method according to claim 1 wherein the local motion parameters vectors are derived from the global motion parameters as follows:

providing global motion parameters vectors for four corners of the current frame;
interpolating the global motion parameters to a pixel location associated with the macroblock;
using a result of the interpolation to identify a location in the reference frame; and
using contents of the reference frame at the identified location to generate image data for the macroblock.

25. (New) A decoder according to claim 10 wherein a processor comprises the input, the decoding logic circuitry and the adding logic circuitry.

26. (New) An encoder according to claim 16 wherein a processor comprises the encoding logic circuitry and the adding logic circuitry.

27. (New) A computer readable medium containing computer executable instructions, the instructions when executed:

receiving encoded image frames wherein a common set of global motion estimation parameters are included in the encoded image frames for identified macroblocks and no local motion vectors are included in the encoded image frames for the identified macroblocks,
deriving local motion vectors for the identified individual macroblocks from the global motion estimation parameters independently of types of local motion vectors or global motion vectors used for other adjacent macroblocks in the encoded image frames

using the derived local motion vectors to identify reference blocks in a current reference frame, and

using the reference blocks to reconstruct the identified macroblocks in a current frame;

wherein deriving the local motion vectors further includes bilinearly interpolating the global motion estimation parameters to locations of the macroblocks in the current frame.

28. (New) The method of claim 27 further including detecting code words included along with the encoded image frames that identify global motion vector coded macroblocks that do not have associated local motion vectors in the encode image frames.

29. (New) The method of claim 28 wherein the code words indicate when the macroblocks are a direct copy of the reference blocks.

30. (New) The method of claim 28 wherein the code words indicate when residuals are added to the reference blocks to reconstruct the macroblocks.